**In The Claims:**

The claims of the application have been amended herein as indicated in the following marked-up copies of the claims:

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13. (currently amended) The device of claim ~~12~~ 26 wherein the processor is further configured to perform the correlation by convolving each vessel contiguous structure with a 3D morphological filter.

14. (original) The device of claim 13 wherein the processor is further configured to perform the correlation by convolving each vessel contiguous structure with a plurality of 3D morphological filters.

15. (original) The device of claim 14 wherein the filters comprise a plurality of spherical filters, each filter being tuned with a different diameter.

16. (original) The device of claim 14 wherein the processor is further configured to determine nodule status for the segmented nodule candidates by determining a nodule status for each nodule candidate at least partially on the basis of geometric criteria.

17. (original) The device of claim 16 wherein the geometric criteria includes size.

18. (original) The device of claim 16 wherein the geometric criteria includes compactness.

19. (original) The device of claim 16 wherein the geometric criteria includes elongation.

20. (original) The device of claim 16 wherein the geometric criteria includes size, compactness, and elongation.

21. (original) The device of claim 14 wherein the processor is further configured to perform the segmentation by determining that a nodule candidate exists if the correlation results in a correlation within a predetermined range of correlation values.

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23. (currently amended) The device of claim ~~22~~ 26 wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with a size criteria.

24. (original) The device of claim 23 wherein the size criteria is diameter.

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26. (currently amended) A ~~The~~ device ~~of claim 25~~ for detecting whether pulmonary nodules are present in a patient's lung region from a three-dimensional (3D) data set representative of a volumetric image of the patient's lung region, the device comprising:

a processor configured to (1) identify contiguous structures in the 3D data set, (2) classify the identified contiguous structures according to a plurality of classifications, the classifications comprising a vessel contiguous structure classification and a non-vessel contiguous structure classification, wherein each non-vessel contiguous structure comprises a nodule candidate, (3) apply a first nodule detection operation to each vessel contiguous structure to determine a nodule status therefor, and (4) apply a second nodule detection operation to each non-vessel contiguous structure to determine a nodule status therefor, wherein the first nodule detection operation is different than the second nodule detection algorithm;

wherein the processor is further configured to apply the first nodule detection operation by (1) segmenting nodule candidate structures from surrounding vessel structures through a correlation of each vessel contiguous structure with a 3D morphological filter, and (2) determining a nodule status for each segmented nodule candidate;

wherein the processor is further configured to apply the second nodule detection operation by determining a nodule status for each non-vessel nodule candidate at least partially on the basis of geometric criteria;

wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with a compactness criteria; and

wherein the processor is further configured to compare each non-vessel nodule candidate with [[a]] the compactness criteria by:

for each non-vessel nodule candidate, (1) determining a volume of that non-vessel nodule candidate, (2) determining a volume of the smallest 3D box that encloses that non-vessel nodule candidate, and (3) computing a ratio of the determined non-vessel nodule candidate volume to the determined box volume; and

for each non-vessel nodule candidate having a determined volume ratio less than approximately 0.5 or greater than approximately 1.5, determining that that non-vessel nodule candidate is not a pulmonary nodule.

27. (currently amended) The device of claim ~~22~~ 26 wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with an elongation criteria.

28. (original) The device of claim 27 wherein the processor is further configured to compare each non-vessel nodule candidate with an elongation criteria by comparing each non-vessel nodule candidate with a two-dimensional (2D) elongation criteria and a 3D elongation criteria.

29. (original) The device of claim 28 wherein the processor is further configured to compare each non-vessel nodule candidate with an elongation criteria by comparing a non-vessel nodule candidate with the 3D elongation criteria only if that non-vessel nodule candidate satisfies the 2D elongation criteria.

30. (currently amended) A ~~The~~ device ~~of claim 27~~ for detecting whether pulmonary nodules are present in a patient's lung region from a three-dimensional (3D) data set representative of a volumetric image of the patient's lung region, the device comprising:

a processor configured to (1) identify contiguous structures in the 3D data set, (2) classify the identified contiguous structures according to a plurality of classifications, the classifications comprising a vessel contiguous structure classification and a non-vessel contiguous structure classification, wherein each non-vessel contiguous structure comprises a nodule candidate, (3) apply a first nodule detection operation to each vessel contiguous structure to determine a nodule status therefor, and (4) apply a second nodule detection operation to each non-vessel contiguous structure to determine a nodule status therefor, wherein the first nodule detection operation is different than the second nodule detection algorithm;

wherein the processor is further configured to apply the first nodule detection operation by (1) segmenting nodule candidate structures from surrounding vessel structures through a correlation of each vessel contiguous structure with a 3D morphological filter, and (2) determining a nodule status for each segmented nodule candidate;

wherein the processor is further configured to apply the second nodule detection operation by determining a nodule status for each non-vessel nodule candidate at least partially on the basis of geometric criteria;

wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with an elongation criteria; and

wherein the processor is further configured to compare each non-vessel nodule candidate with ~~an~~ the elongation criteria by:

for each non-vessel nodule candidate, (1) determining a length of a major axis of the smallest rectangle or ellipse that encloses that non-vessel nodule candidate, (2) determining a length of a minor axis of the smallest rectangle or ellipse that encloses that non-vessel nodule candidate, (3) computing a ratio of the major axis length to the minor axis length; and

for each non-vessel nodule candidate having a determined elongation axis ratio greater than approximately 3.0, determining that that non-vessel nodule candidate is not a pulmonary nodule.

31. (currently amended) A ~~The~~ device ~~of claim 27~~ for detecting whether pulmonary nodules are present in a patient's lung region from a three-dimensional (3D) data set representative of a volumetric image of the patient's lung region, the device comprising:

a processor configured to (1) identify contiguous structures in the 3D data set, (2) classify the identified contiguous structures according to a plurality of classifications, the classifications comprising a vessel contiguous structure classification and a non-vessel contiguous structure classification, wherein each non-vessel contiguous structure comprises a nodule candidate, (3) apply a first nodule detection operation to each vessel contiguous structure to determine a nodule status therefor, and (4) apply a second nodule detection operation to each non-vessel contiguous structure to determine a nodule status therefor, wherein the first nodule detection operation is different than the second nodule detection algorithm;

wherein the processor is further configured to apply the first nodule detection operation by (1) segmenting nodule candidate structures from surrounding vessel structures through a correlation of each vessel contiguous structure with a 3D morphological filter, and (2) determining a nodule status for each segmented nodule candidate

wherein the processor is further configured to apply the second nodule detection operation by determining a nodule status for each non-vessel nodule candidate at least partially on the basis of geometric criteria;

wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with an elongation criteria; and

wherein the processor is further configured to compare each non-vessel nodule candidate with ~~an~~ the elongation criteria by:

for each non-vessel nodule candidate, (1) determining a maximum eigenvalue from coordinates of the voxels of that non-vessel nodule candidate, (2) determining a minimum eigenvalue from coordinates of the voxels of that non-vessel nodule candidate, (3) computing a ratio of the maximum eigenvalue to the minimum eigenvalue; and

for each non-vessel nodule candidate having a determined elongation eigenvalue ratio greater than approximately 3.0, determining that that non-vessel nodule candidate is not a pulmonary nodule.

32. (currently amended) The device of claim ~~22~~ 26 wherein the processor is further configured to determine a nodule status for each non-vessel nodule candidate by comparing each nodule candidate with a size criteria, a compactness criteria, and an elongation criteria.

33. (currently amended) The device of claim ~~11~~ 26 wherein the processor is further configured to generate the 3D data set from a plurality of 2D image slices of the patient's lung region.

34. (original) The device of claim 33 wherein the 2D image slices comprise a plurality of computed tomography slices.

35. (original) The device of claim 33 wherein the 2D image slices comprise a plurality of magnetic resonance slices.

36. (original) The device of claim 33 wherein the 2D image slices comprise a plurality of ultrasound slices.

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38. (currently amended) The device of claim ~~37~~ 46 wherein the processor is configured to perform the correlation by correlating each identified subset with a plurality of 3D morphological filters, each filter being tuned to a different expected shape of a perivascular nodule.

39. (original) The device of claim 38 wherein at least one filter is a spherical filter tuned with a predetermined diameter.

40. (original) The device of claim 39 wherein the predetermined diameter is approximately 3 mm.

41. (original) The device of claim 38 wherein a plurality of the filters are spherical filters, each spherical filter being tuned with a different predetermined diameter.

42. (original) The device of claim 38 wherein the processor is further configured to perform the correlation by performing the correlations in parallel, each parallel correlation being configured to correlate an identified subset with one of the filters.

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44. (currently amended) The device of claim ~~43~~ 46 wherein the processor is further configured to perform the segmentation by determining whether a perivascular nodule candidate exists at least partially according to the computed correlation value.

45. (original) The device of claim 44 wherein the processor is further configured to determine whether a perivascular nodule candidate exists by determining that a perivascular nodule candidate does exist if the computed correlation value lies within a predetermined range of correlation values.

46. (currently amended) A ~~The~~ device ~~of claim 43~~ for analyzing a 3D data set representative of a patient's lung region, the device comprising:

a processor configured to (1) group the data set into data subsets, each subset being representative of a contiguous structure, (2) identify each data subset that corresponds to a vessel, and (3) segment any perivascular nodule candidates from each identified subset by correlating that identified subset with at least one 3D morphological filter that is tuned to an expected shape of a perivascular nodule;

wherein the processor is further configured to perform the correlation by convolving each identified subset with the at least one filter to thereby compute a correlation value; and

wherein the processor is further configured to perform the convolution by computing the correlation value between the identified subset (I) and the filter (F) by a Fast Fourier Transform (FFT) according to the formula:

$$(I * F)(t) = \sum I(t) \cdot F(x-t) = \frac{1}{n_i n_f} \sum_{x=0}^{n-1} I(u_i) \cdot \exp(2\pi i u_i x / n_i) \cdot F(u_f) \cdot \exp(2\pi i u_f (t-x) / n_f)$$

wherein $u_i$ is a value of an $i^{th}$ voxel in I, wherein $u_f$ is a value of an $f^{th}$ voxel in F, wherein $n_i$ is a value for a total number of voxels in I, and wherein $n_f$ is a value for a total number of voxels in F.

47. (currently amended) The device of claim ~~38~~ 46 wherein the processor is further configured to, for each segmented perivascular nodule candidate, determine a nodule status therefor at least partially on the basis of geometric criteria.

48. (original) The device of claim 47 wherein the geometric criteria comprises at least one selected from the group consisting of candidate size, candidate compactness, and candidate elongation.

49. (currently amended) The device of claim ~~37~~ 46 wherein the processor is further configured to generate the 3D data set from one selected from the group consisting of a plurality of computed tomography (CT) slices, a plurality of magnetic resonance (MR) slices, and a plurality of ultrasound slices.

50. (currently amended) The device of claim ~~37~~ 46 wherein the processor is further configured to (1) identify each data subset that corresponds to a non-vessel, and (2) for each subset identified as corresponding to a non-vessel, determine a nodule status therefor at least partially on the basis of geometric criteria.

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69. (new) The device of claim 30 wherein the processor is further configured to perform the correlation by convolving each vessel contiguous structure with a 3D morphological filter.

70. (new) The device of claim 69 wherein the processor is further configured to perform the correlation by convolving each vessel contiguous structure with a plurality of 3D morphological filters.

71. (new) The device of claim 70 wherein the filters comprise a plurality of spherical filters, each filter being tuned with a different diameter.

72. (new) The device of claim 70 wherein the processor is further configured to determine nodule status for the segmented nodule candidates by determining a nodule status for each nodule candidate at least partially on the basis of geometric criteria.

73. (new) The device of claim 72 wherein the geometric criteria includes size.

74. (new) The device of claim 72 wherein the geometric criteria includes compactness.

75. (new) The device of claim 72 wherein the geometric criteria includes size, compactness, and elongation.

76. (new) The device of claim 70 wherein the processor is further configured to perform the segmentation by determining that a nodule candidate exists if the correlation results in a correlation within a predetermined range of correlation values.

77. (new) The device of claim 30 wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with a size criteria.

78. (new) The device of claim 77 wherein the size criteria is diameter.

79. (new) The device of claim 30 wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with the elongation criteria.

80. (new) The device of claim 79 wherein the processor is further configured to compare each non-vessel nodule candidate with an elongation criteria by comparing each non-vessel nodule candidate with a two-dimensional (2D) elongation criteria and a 3D elongation criteria.

81. (new) The device of claim 80 wherein the processor is further configured to compare each non-vessel nodule candidate with an elongation criteria by comparing a non-vessel nodule

candidate with the 3D elongation criteria only if that non-vessel nodule candidate satisfies the 2D elongation criteria.

82. (new) The device of claim 30 wherein the processor is further configured to generate the 3D data set from a plurality of 2D image slices of the patient's lung region.

83. (new) The device of claim 82 wherein the 2D image slices comprise a plurality of computed tomography slices.

84. (new) The device of claim 82 wherein the 2D image slices comprise a plurality of magnetic resonance slices.

85. (new) The device of claim 82 wherein the 2D image slices comprise a plurality of ultrasound slices.

86. (new) The device of claim 31 wherein the processor is further configured to perform the correlation by convolving each vessel contiguous structure with a 3D morphological filter.

87. (new) The device of claim 86 wherein the processor is further configured to perform the correlation by convolving each vessel contiguous structure with a plurality of 3D morphological filters.

88. (new) The device of claim 87 wherein the filters comprise a plurality of spherical filters, each filter being tuned with a different diameter.

89. (new) The device of claim 87 wherein the processor is further configured to determine nodule status for the segmented nodule candidates by determining a nodule status for each nodule candidate at least partially on the basis of geometric criteria.

90. (new) The device of claim 89 wherein the geometric criteria includes size.

91. (new) The device of claim 89 wherein the geometric criteria includes compactness.

92. (new) The device of claim 89 wherein the geometric criteria includes size, compactness, and elongation.

93. (new) The device of claim 87 wherein the processor is further configured to perform the segmentation by determining that a nodule candidate exists if the correlation results in a correlation within a predetermined range of correlation values.

94. (new) The device of claim 31 wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with a size criteria.

95. (new) The device of claim 94 wherein the size criteria is diameter.

96. (new) The device of claim 31 wherein the processor is further configured to determine the nodule status for each non-vessel nodule candidate by comparing each nodule candidate with the elongation criteria.

97. (new) The device of claim 96 wherein the processor is further configured to compare each non-vessel nodule candidate with an elongation criteria by comparing each non-vessel nodule candidate with a two-dimensional (2D) elongation criteria and a 3D elongation criteria.

98. (new) The device of claim 97 wherein the processor is further configured to compare each non-vessel nodule candidate with an elongation criteria by comparing a non-vessel nodule candidate with the 3D elongation criteria only if that non-vessel nodule candidate satisfies the 2D elongation criteria.

99. (new) The device of claim 31 wherein the processor is further configured to generate the 3D data set from a plurality of 2D image slices of the patient's lung region.

100. (new) The device of claim 99 wherein the 2D image slices comprise a plurality of computed tomography slices.

101. (new) The device of claim 99 wherein the 2D image slices comprise a plurality of magnetic resonance slices.

102. (new) The device of claim 99 wherein the 2D image slices comprise a plurality of ultrasound slices.